MSDS 35A

Material Safety Data Sheet

PPG Industries, Inc.
One PPG Place
Pittsburgh, PA 15272

Approved by U.S. Dept. of Labor as "Essentially similar" to Form OSHA-20

Date: April , 1982	Edition: Sixth
Chemical Name and Synonyms: 1,1,1-trichloroethane; methylchloroform CAS No. 71-55-6	Trade Name and Synonyms: Tri-Ethane®
Chemical Family: Halogenated Hydrocarbons	Formula: CH_3CCl_3
DOT Shipping Name: 1,1,1-trichloroethane	DOT Hazard Class: ORM-A
Reportable Quantity:	I. D. Number: UN2831

SECTION 1 · PHYSICAL DATA

Boiling Point @ 760 mm Hg: 165.4°F	Vapor Density (Air=1): 4.54	Specific Gravity (H_2O=1): 1.300-1.320 @ 25°/25°C	pH of Solutions: 6.0 to 7.5
Freezing/Melting Point: -49°F -45°C	Solubility (Weight % in Water): Negligible	Bulk Density: 10.80-10.97 lbs/gal @ 25°C	Volume % Volatile: 100
Vapor Pressure: @25°C = 135mmHg	Evaporation Rate (ethyl ether = 1): 0.35	Heat of Solution: Not Applicable	Appearance and Odor: Clear, colorless liquid - ether-like odor.

SECTION 2 · HAZARDOUS INGREDIENTS

	%	Hazard Data
1,1,1-trichloroethane (Stabilized)	100	See Below

SECTION 3 · FIRE AND EXPLOSION HAZARD DATA

Flash Point °F (Method Used) None when tested in accordance with DOT requirements.	Flammable Limits in Air (% by Volume) LEL: 7% UEL: 15% See Below	Extinguishing Media: water, dry chemical or carbon dioxide

Special Fire Fighting Procedures: Fire fighters should wear a NIOSH/MSHA-approved pressure-demand, self-contained breathing apparatus for possible exposure to hydrogen chloride and possibly traces of phosgene.

Unusual Fire and Explosion Hazards: Vapors concentrated in a confined or poorly ventilated area can be ignited upon contact with a high energy spark, flame, or high intensity source of heat. This can occur at concentrations ranging between 7-15% by volume. Decomposition or burning can produce hydrogen chloride or possibly traces of phosgene.

SECTION 4 · HEALTH HAZARD DATA

Toxicity Data	Classification (Poison, Irritant, Etc.)
LC_{50} Inhalation rat 8,000 ppm/7 hours	Inhalation: Toxic
LD_{50} Dermal rabbit > 15g/kg(2)	Skin Not significantly toxic
Skin/Eye Irritation See Section 5	Skin/Eye: Liquid mildly irritating to skin; eye irritant
LD_{50} Ingestion rat 10-12g/kg (See Section 5)	Ingestion: Not significantly toxic
Fish, LC_{50} (Lethal Concentration) Not Determined	Aquatic:

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SECTION 5 · EFFECTS OF OVEREXPOSURE

This section covers effects of overexposure for inhalation, eye/skin contact, ingestion and other types of overexposure information in the order of the most hazardous and the most likely route of overexposure.

Permissible Exposure Limits (TLV): 350 ppm - 8-hour time-weighted average (TWA) - OSHA 29CFR 1910.1000 (May 28, 1975). PPG internal permissible exposure limit is 350 ppm 8-hour TWA with a short-term exposure limit (STEL) of 450 ppm for any 15-minute excursion period.

Acute

Primarily a central nervous system depressant. Inhalation can cause irritation of the respiratory system, dizziness, nausea, lightheadedness, headache, loss of coordination and equilibrium, unconsciousness and even death in confined or poorly ventilated areas. Depression of the circulatory system has been reported as a result of overexposure to Tri-Ethane®. The heart may be sensitized by Tri-Ethane®, and ventricular arrhythmia may be induced by epinephrine administration.

Liquid splashed in the eyes can result in discomfort, pain and irritation. Prolonged or repeated contact with liquid on the skin can cause irritation and dermatitis. The problem may be accentuated by liquid becoming trapped against the skin by contaminated clothing and shoes. Skin absorption can occur.

Chronic

Prolonged exposure above the OSHA permissible exposure limits may result in liver and kidney damage. Tri-Ethane® has been extensively studied for cancer both in the U.S. and Europe by government, industry and academia in multiple species and biological test specimens. Recent reviews of these data by the Science Advisory Board to EPA's carcinogen assessment group concluded that there was no evidence to support the carcinogenicity of Tri-Ethane®. There is no documented evidence that Tri-Ethane® causes an increased cancer incidence in humans.

EMERGENCY AND FIRST AID PROCEDURES:

Inhalation: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

Eye or Skin Contact: Flush eyes and skin with plenty of water (soap and water for skin) for at least 15 minutes, while removing contaminated clothing and shoes. If irritation occurs, consult a physician.

Ingestion: If conscious, drink large quantities of water. DO NOT induce vomiting. Take immediately to a hospital or physician. If unconscious, or in convulsions, take immediately to a hospital. DO NOT give anything by mouth to an unconscious person.

Notes to Physician (Including Antidotes): NEVER administer adrenalin following Tri-Ethane® overexposure. Increased sensitivity of the heart to adrenalin may be caused by over-exposure to Tri-Ethane®.

SECTION 6 · REACTIVITY DATA

Stability: Stable	**Conditions to Avoid:** Avoid open flames, hot glowing surfaces or electric arcs.
Hazardous Polymerization: Will not occur.	**Conditions to Avoid:** None

Incompatibility (Materials to Avoid): Avoid contamination with caustic soda, caustic potash or oxidizing materials. Shock sensitive explosives may be formed.

Hazardous Decomposition Products: Hydrogen chloride and possibly traces of phosgene.

SECTION 7 · SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Spilled or Released: Immediately evacuate the area and provide maximum ventilation. Unprotected personnel should move upwind of spill. Only personnel equipped with proper respiratory and skin/eye protection should be permitted in area. Dike area to contain spill. Take precautions as necessary to prevent contamination of ground and surface waters. Recover or absorb spilled material on sawdust or vermiculite and sweep into closed containers for disposal. After all visible traces have been removed, thoroughly wet vacuum the area. DO NOT flush to sewer. If area of spill is porous, remove as much contaminated earth and gravel, etc., as necessary and place in closed containers for disposal. (See Below)

Waste Disposal Method: Contaminated sawdust, vermiculite or porous surface must be disposed of in a permitted hazardous waste management facility. Recovered liquids may be re-processed or incinerated or must be treated in a permitted hazardous waste management facility.[7] Care must be taken when using or disposing of chemical materials and/or their containers to prevent environmental contamination. It is your duty to dispose of the chemical materials and/or their containers in accordance with the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act as well as any other relevant federal, state or local laws/regulations regarding disposal.

SECTION 8 · SPECIAL PROTECTION INFORMATION

Respiratory Protection: For emergencies or working in confined areas, wear self-contained breathing apparatus or suppplied air respiratory protection. In other circumstances involving potential overexposure, use NIOSH/MSHA-approved organic vapor respirator. (Observe limitations directed by manufacturer). Respiratory protection program must be in accordance with 29CFR 1910.134.

Ventilation (Type): Dilution (General) or Local Exhaust - Sufficient to maintain workplace concentration below permissible exposure limits.

Eye Protection: Splashproof Goggles | **Gloves:** polyethylene, neoprene or polyvinyl alcohol

Other Protective Equipment: Safety shower and eye-wash fountain in immediate area. Personnel protective clothing and use of equipment must be in accordance with 29CFR 1910.133 and 29CFR 1910.132.

SECTION 9 · SPECIAL PRECAUTIONS

Precautions to be Taken During Handling and Storing:

- Do not use in poorly ventilated or confined areas.
- Tri-Ethane® vapors are heavier than air and will collect in low areas.
- Keep container closed when not in use.
- Do not store in open, unlabeled or mislabeled containers.
- Liquid oxygen or other strong oxidants may form explosive mixtures with Tri-Ethane®.
- This material or its vapors when in contact with flames, hot glowing surfaces or electric arcs can decompose to form hydrogen chloride gas and traces of phosgene.
- AVOID CONTAMINATION OF WATER SUPPLIES: Handling, storage, and use procedures must be carefully monitored to avoid spills or leaks. Any spill or leak has the potential to cause underground water contamination which may, if sufficiently severe, render a drinking water source unfit for human consumption. Contamination that does occur cannot be easily corrected.
- A chlorinated solvent used as a flashpoint suppressant must be added in sufficient quantity or the resultant mixture may have a flashpoint lower than the flammable component.
- (ıtion should be taken not to use in pressurized or totally enclosed system of aluminum (ıstruction. Example, paint or adhesive spray system.

Oth / Precautions:

- AVOID PROLONGED OR REPEATED BREATHING OF VAPORS. High vapor concentrations can cause dizziness, unconsciousness or death. Long-term overexposure may cause liver/kidney injury.
- USE ONLY WITH ADEQUATE VENTILATION. Ventilation must be sufficient to limit employee exposure to Tri-Ethane® below OSHA permissible limits (8-hour TWA 350ppm). Observance of lower limits (outlined in Section 4) is advisable.
- AVOID CONTACT WITH EYES. Will cause irritation and pain.
- AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. May cause irritation or dermatitis.
- DO NOT TAKE INTERNALLY. Swallowing may cause injury or death.
- DO NOT EAT, DRINK, OR SMOKE IN WORK AREAS.

References:

1. NIOSH Registry of Toxic Effects of Chemical Substances, 1978
2. Industrial Hygiene and Toxicology, Volume II, Second Edition, F. A. Patty, 1963
3. Dangerous Properties of Industrial Materials, Fifth Edition, N. I. Sax, 1979
4. Industrial Toxicology, Hamilton and Hardy, 1974
5. Toxicity and Metabolisms of Industrial Solvents, Browning, 1965
6. Toxicology, the Basic Science of Poisons, Casarett and Doull, 1980
7. Federal Register, 45FR Hazardous Waste Management Systems Part III, Identification and Listing of Hazardous Wastes, Page 33084, May 19, 1980
8. EPA Science Advisory Board, Subcommittee on Airborne Carcinogens, September, 1980

Mgr., Product Safety

Tri-Ethane (1,1,1-trichloroethane)

Act/Agency	
Occupational Safety and Health Act (OSHA)	8-hour TWA - 350 ppm
Clean Water Act	Listed as a toxic pollutant under Section 307 regulating waste water discharge. Refer to PL95-217
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund)	Hazardous substance reportable spill quantity - 1.0 pound. Refer to H.R. 7020
Clean Air Act	Refer to individual state regulations concerning volatile organic compounds for any requirements as many states have legislation covering 1,1,1-trichloroethane. Refer to PL95-95
Toxic Substance Control Act	No action taken with respect to 1,1,1-trichloroethane under this act. Refer to PL94-469
Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)	Exempt from requirement of a tolerance for residues when used in the post harvest fumigation of citrus fruits.
Resource Conservation and Recovery Act (RCRA)	Labeling, storage, transportation and disposal extensively covered under hazardous waste regulation. Refer to PL94-580
Department of Transportation (DOT)	ORM-A Hazard Class. Regulated when shipped by air in any size. (See 49CFR 100-199)
Food and Drug Administration (FDA)	Chemically acceptable as a solvent for use in nonprocessing areas of official establishments operating under the Federal meat and poultry products inspection program.
Consumer Product Safety Commission (CPSC)	No action taken by CPSC with respect to 1,1,1-trichloroethane.
Federal Hazardous Substance Act	Not applicable unless repackaged for resale in the consumer marketplace. Labeling requirements must then be met. Refer to 16 CFR 1500

Note: States and local municipalities may have regulations which differ from those of the federal requirements for each of the above. Contact the appropriate agencies in your location to obtain information concerning any state or local requirements which mav affect you.

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